

Adding and Subtracting Integers

Outcomes we have already completed

A12 represent integers (including zero) concretely, pictorially, and symbolically, using a variety of models

A13 compare and order integers

Adding and Subtracting Integers

Outcome covered in this lesson

SCO: By the end of grade 7,
students will be expected to
**B11 add and subtract integers
concretely, pictorially, and
symbolically to solve
problems**

Adding Integers

There are three different ways you can add integers.

- 1. Mentally doing them in your head, by comparing the numbers and finding the sum.**
- 2. Using counters and the zero principle.**
- 3. Using a number line.**

Adding Integers

Using counters. $(+3) + (-4) =$

Step 1

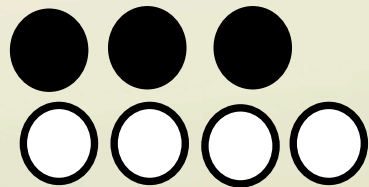
Simply draw or use manipulatives to show the question.

$$(+3) + (-4) =$$



Step 2

Use the zero principle to figure out the sum.



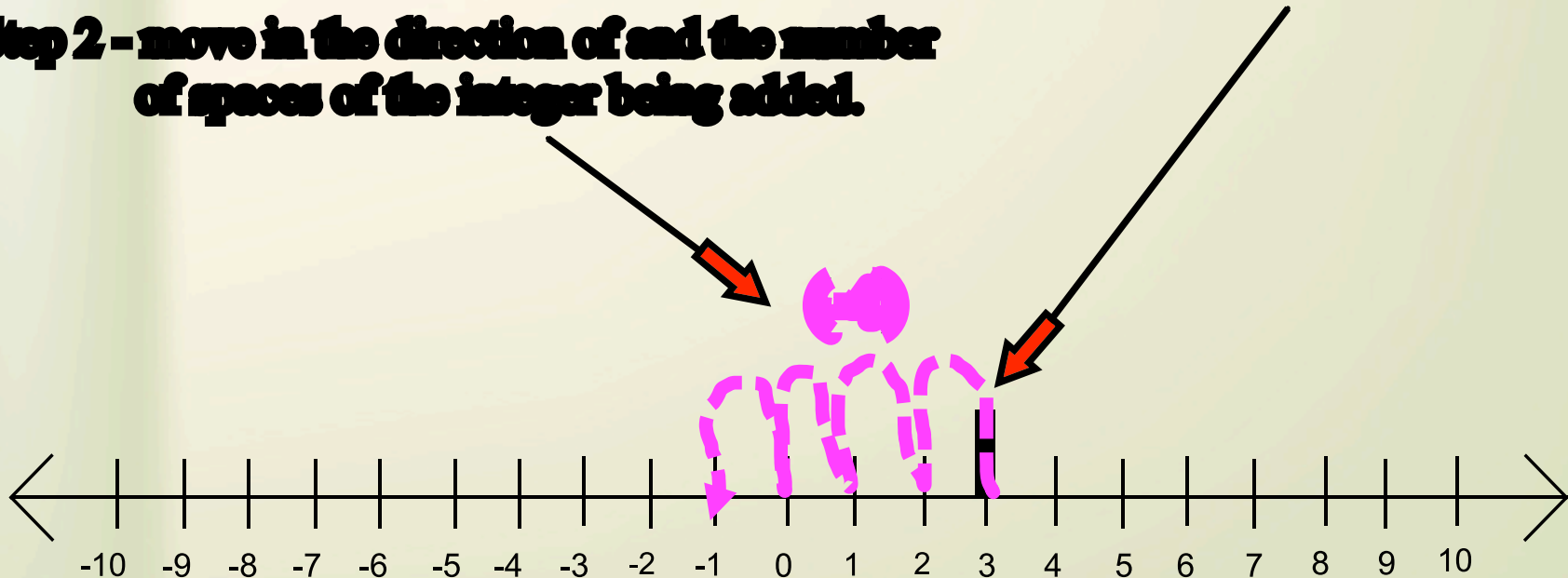
Adding Integers

Using a Number Line

$$(+3) + (-4) =$$

step 1 - start at the first integer.

Step 2 - move in the direction of and the number of spaces of the integer being added.



Step 3 - Where you stop is your result (-1)

Subtracting Integers

There are four or more different ways to subtract integers

- 1. Of course you can use mental math, and do it in your head.**
- 2. You can subtract using counters and making a bank.**
- 3. You can subtract by using the number line.**
- 4. Think of the question as an addition question.**

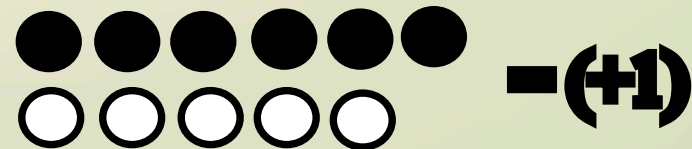
Subtracting Integers

2. Subtracting Integers by using counters and making a bank.

First of all you need to remember that when you are subtracting you are taking things away, and counters are excellent for showing taking away.

Second you need to recall the zero principle and the fact that integers can be shown in many different forms using counters meaning that you can use different amounts of counters to show the same number.

Ex.



Subtracting Integers

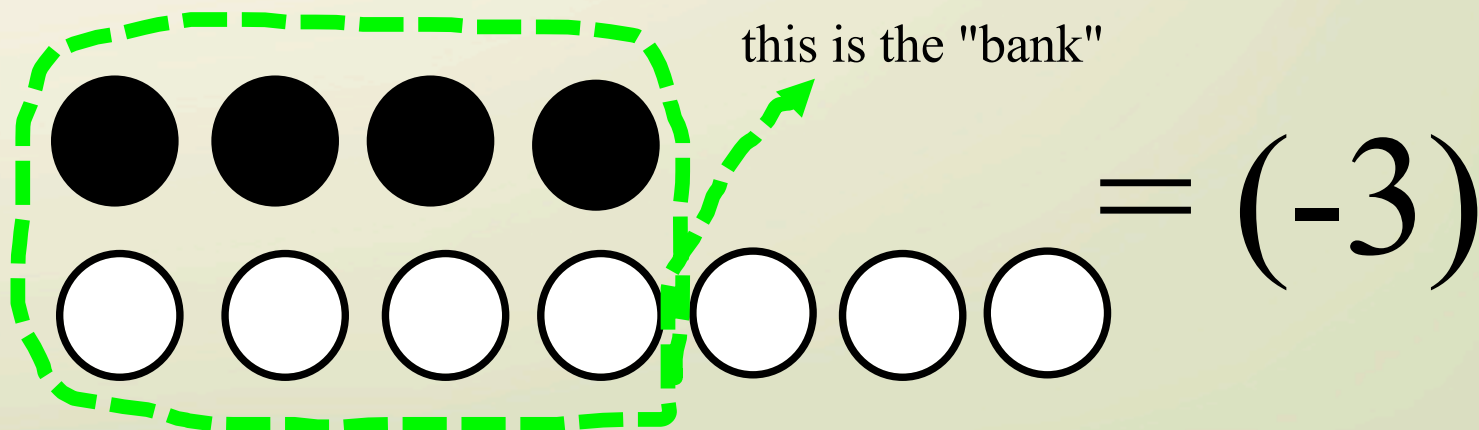
2. Subtracting Integers by using counters and making a bank.

$$(-3) - (+4) =$$

Step one: Just like addition you need to show the first number with counters, but the difference is that you need to look to the second number and ask yourself "**How much do I need to take away?**"

In the case of the example we will have to take away (+4).

Therefore we will have to enable ourselves to do that when we show the first number.

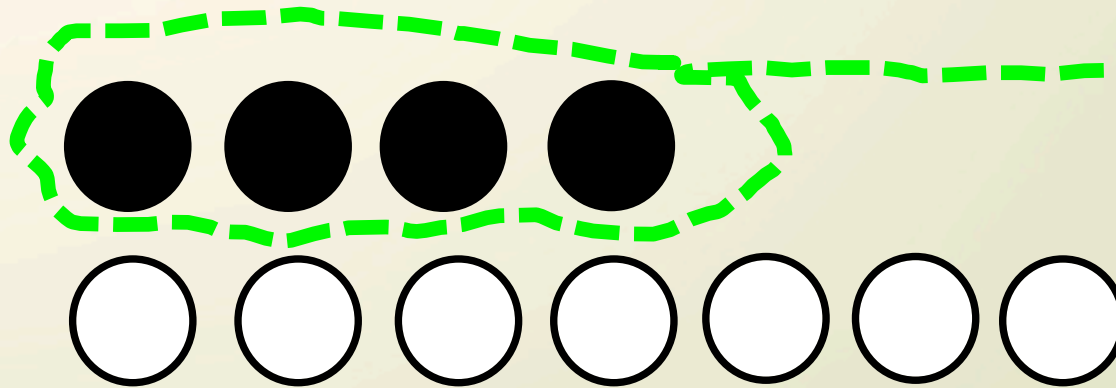


Subtracting Integers

2. Subtracting Integers by using counters and making a bank.

$$(-3) - (+4) =$$

This also shows the number that needs to be taken away. (+4)



This shows the first number (-3)

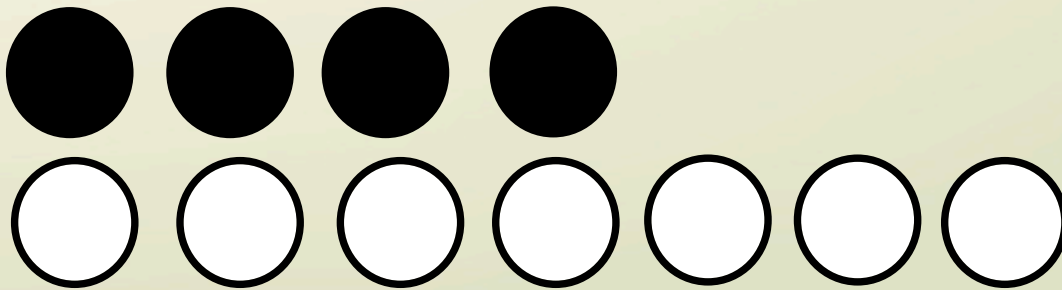
Subtracting Integers

2. Subtracting Integers by using counters and making a bank.

$$(-3) - (+4) =$$

Step Two: Take away the number (+4)
by actually taking away the
counters.

You will be left the difference



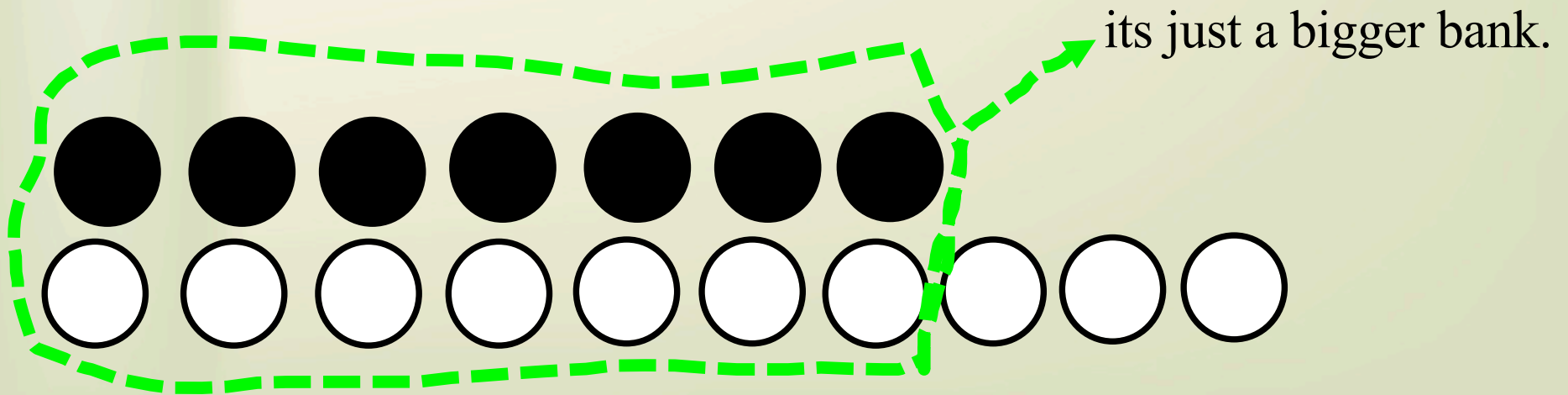
Subtracting Integers

2. Subtracting Integers by using counters and making a bank.

$$(-3) - (+4) =$$

It also works just the same if you show the first number in a different way.

This still shows (-3) , and when you take away $(+4)$ you get the same result.



Subtracting Integers

Using a number line

$$(-3) - (+4) =$$

Step One: Start at the first number (-3)

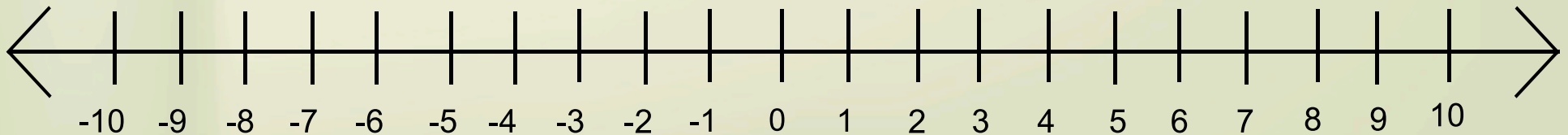


Subtracting Integers

Using a number line

$$(-3) - (+4) =$$

Now comes the thinking part,
you know you move right when you add a positive, and you
move left when you subtract a positive.

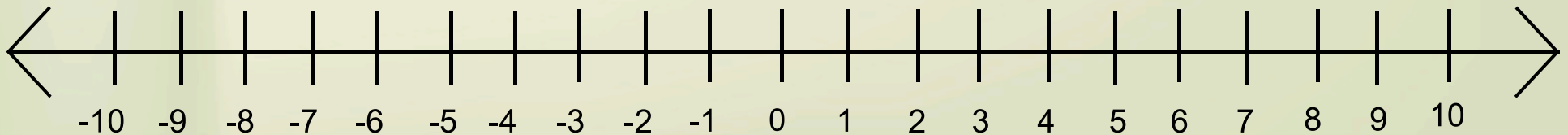
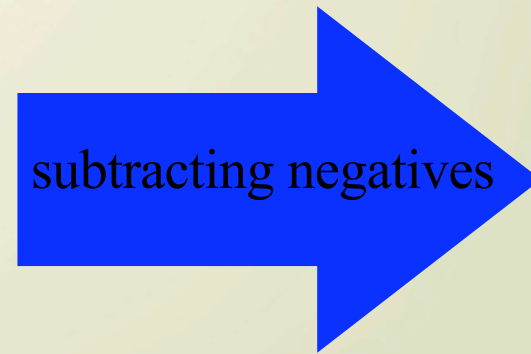
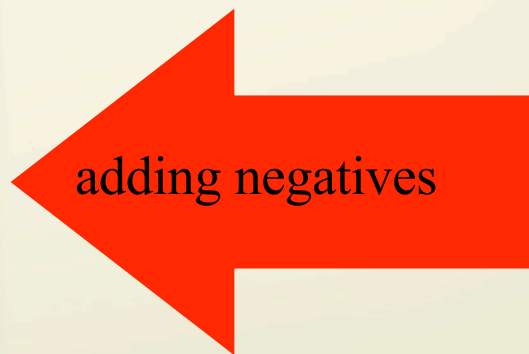


Subtracting Integers

Using a number line

$$(-3) - (+4) =$$

You need to reverse your thinking for negatives

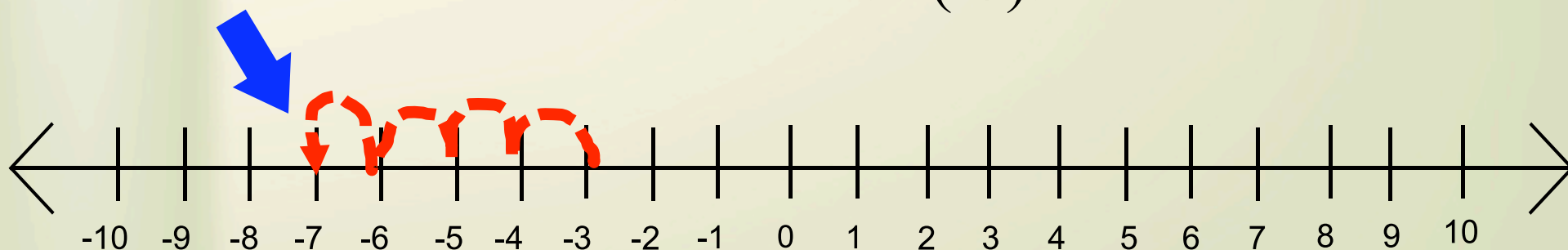


Subtracting Integers

Using a number line

$$(-3) - (+4) =$$

Step Two: We subtract the $(+4)$ by moving left four places and stopping at the difference (-7) .



Subtracting Integers

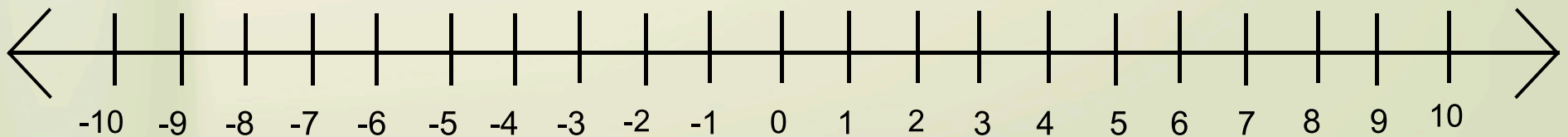
Using a number line

Lets try a different question

$$(+2) - (-5) =$$

Move in the proper
direction for
subtracting a
negative

Start

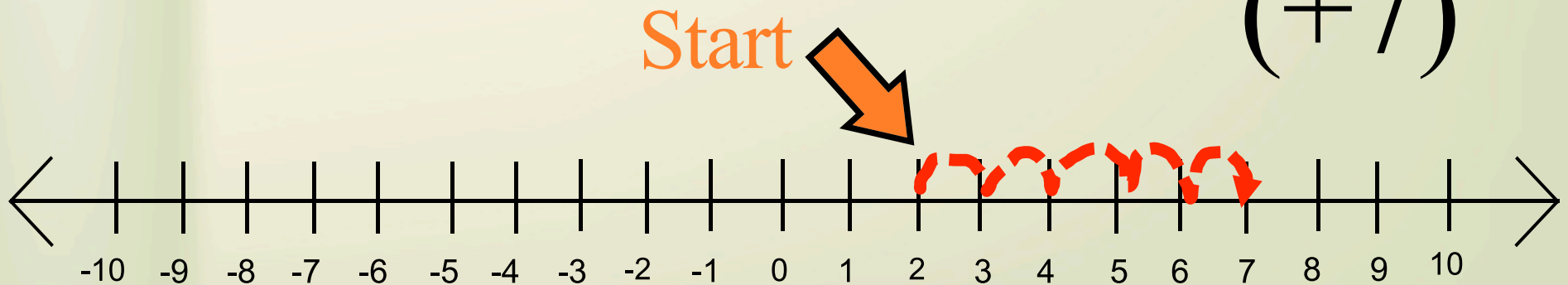


Subtracting Integers

Using a number line

$$(+2) - (-5) =$$

Difference
(+7)



Subtracting Integers

4. Thinking of the question as an addition question.

You can always change a subtraction question to an addition question.

Example $8 - 2 =$ Instead of thinking

$$8 - 2 = ?$$

8 minus 2 equals what?.



Think

$$2 + ? = 8$$

2 plus what equals 8?

Subtracting Integers

4. Thinking of the question as an addition question.

Lets try this strategy with this question

$$(-3) - (+4) =$$

change the question

$$(+4) + ? = (-3)$$